Descriptive scales versus comparative scales

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Abstract
In this paper, I show that scales (or hierarchies) have been appealed to in various functions: They have been used to formulate descriptive generalizations (on a single language), and to formulate cross-linguistic generalizations. They have also been used for binary relations, and for implicational relations among more than two items on the scale. This yields four uses of scales (descriptive relational, comparative relational, descriptive implicational, comparative implicational). I argue that descriptive and comparative scales must be strictly distinguished, because the descriptive categories and the comparative concepts that they are based on are quite different in nature. Description of language-specific facts in terms of scales that are also used for cross-linguistic comparison should be avoided.

1. Introduction

In this short paper, I argue that descriptive scales and comparative scales should be distinguished carefully. Failure to do so has led researchers astray in the past.

Note that I distinguish between two aspects of linguistic research (descriptive and comparative linguistics), and two uses of scales (relational use and implicational use); by combining these we get four kinds of scales.

Descriptive linguistics is concerned with describing (or "analyzing") individual languages, while **comparative linguistics** (also called *typology*) compares languages (regardless of their possible genealogical relatedness) and attempts to formulate cross-linguistic generalizations.

In the **relational use of scales**, two items on a scale are compared in the formulation of a regularity. For example, in Navajo (an Athapaskan language of the southwestern United States), the rule of Subject-Object Inversion (marked by *bi-,* Hale 1973) can be formulated in terms of the scale in (1).

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(1) ***human > animate > inanimate***

Given this scale, the rule can be formulated as in (2).

(2) Subject-Object Inversion
   a. If the subject is higher than the object on the scale, inversion is blocked.
   b. If the subject is lower than the object on the scale, inversion is obligatory.
   c. If both have equal rank, inversion is optional.

The inversion construction is marked by the prefix *bi-*, as illustrated in (3a-b), where (3a) shows the direct construction, while (3b) shows the inverse construction.

(3) Navajo
   a. *ashkii* *łíį́'* *yiztal* (direct)
      boy horse 3.ACC.3.NOM.kicked
      'The boy kicked the horse.'
   b. *ashkii* *łíį́'* *biztal* (inverse)
      boy horse 3.ACC.3.NOM.kicked
      'The boy was kicked by the horse.'

By contrast, in the **implicational use of scales,** a statement that applies to one item on a scale also extends to all items higher on the scale. For example, if a language uses object marking for an NP type on the animacy scale, it also uses object marking for all NP types that are higher on the animacy scale.

We can thus distinguish the four kinds of scales shown in Fig. 1. The four kinds of scales are exemplified in a little more detail in the next section.

Figure 1: Four kinds of scales

	descriptive linguistics	**comparative linguistics**
relational use	e.g. Navajo *bi-* (Hale 1973)	e.g. Ditransitive Person-Role Constraint (Haspelmath 2004a)
implicational use	e.g. differential object marking in Spanish (Aissen 2003)	e.g. universals of differential object marking (Lazard 1994)

2. Four kinds of scales

Let us now look at each of the four kinds of scales in turn. I will present one example of each of the types from the literature.

2.1. Descriptive relational

A descriptive relational scale has been briefly presented above: the Navajo animacy scale for the rule of Subject-Object Inversion. Descriptive relational scales are also well-known from phonology. For example, Hooper (1976:208) formulates a strength scale for Spanish syllable structure, shown in (4). This scale is (at least initially) formulated only for Spanish, i.e. it is a descriptive scale.

(4) w, j > r > l > m, n, ñ > s, x > β, ð, γ > ĵ, γ^{w} > r̃ > f, b, d, g > p, t, k > č

Given this scale, Hooper formulates the syllable structure regularity in (5) for Spanish. (Some details are omitted here because the regularity is cited here only as an example.)

(5) Syllable Structure Condition for Spanish (simplified):
a. Spanish syllables obey a maximal template $C_1C_2C_3VC_4C_5$
b. where $C_1 > C_2$, $C_2 > C_3$, $C_4 < C_5$ (i.e. consonantal strength first decreases and then increases monotonically)

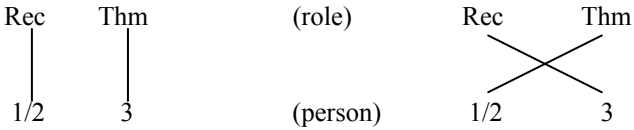
Thus, Spanish has syllables like *tris*. This is a relational use of a scale because what matters is the relation of two items on the scale to each other, not an implication.

2.2. Comparative relational

A comparative relational scale is used for formulating a cross-linguistic generalization in terms of a scale. This type of scale is exemplified by the Ditransitive Person-Role Constraint (DPRC), as discussed by Haspelmath (2004a). DPRC effects arise when the **Recipient** is not higher than the **Theme** on the person scale, i.e. when the association of the role scale (cf. 6a) and the person scale (cf. 6b) is not harmonic (cf. 7a), but disharmonic (cf. 7b).

(6) a. Role scale: Rec > Thm
b. Person scale: 1,2 > 3

(7) a. canonical association of the scales: b. disharmonic association:



Given the two scales in (6) and their associations in (7), Haspelmath (2004a) formulates the cross-linguistic generalization in (8):

(8) DPRC generalization
All languages with bound object pronouns allow (7a), and all languages that do not allow all combinations disallow (7b).

Below I give examples of DPRC effects in three languages, French (9), Modern Greek (10) and Shambala (11). In all these cases, the canonical association of the person and role scales yields acceptable combinations of bound pronouns (cf. 9a, 10a, 11a), while the disharmonic association yields unacceptable combinations (cf. 9b, 10b, 11b). To express this association, some other, more elaborate construction that avoids a bound pronoun combination has to be used (cf. 9c, 10c, 11c).

(9) French (e.g. Grevisse 1986:§657 (b) 1°)
a. (1>3) *Agnès* *me* *la* *présentera.*
Agnès 1SG.REC 3SG.F.THM present.FUT.3SG
'Agnès will introduce her to me.'

b. (3>1) **Agnès me lui présentera.*
Agnès 1SG.THM 3SG.F.REC present.FUT.3SG
'Agnès will introduce me to her.'

c. *Agnès me présentera à elle.*
Agnès 1SG.THM present.FUT.3SG to her
'Agnès will introduce me to her.'

(10) Modern Greek (Anagnostopoulou 2003:252-3; cf. also Warburton 1977)

a. (2>3) *Tha su ton stílune.*
FUT 2SG.REC 3SG.M.THM send.PF.3PL
'They will send him to you.'

b. (3>2) **Tha tu se stílune.*
FUT 3SG.M.REC 2SG.THM send.PF.3PL
'They will send you to him.'

c. *Tha tu stílune eséna.*
FUT 3SG.M.REC send.PF.3PL you.OBL
'They will send you to him.'

(11) Shambala (Bantu-G, Tanzania; Duranti 1979:36)

a. (1>3) *A-za-m-ni-et-ea.*
3SG.SUBJ-PAST-3SG.THM-1SG.REC-bring-APPL
'S/he has brought him/her to me.'

b. (3>1) **A-za-ni-mw-et-ea.*
3SG.SUBJ-PAST-1SG.THM-3SG.REC-bring-APPL
'S/he has brought me to him/her.'

c. *A-za-ni-eta kwa yeye.*
3SG.SUBJ-PAST-1SG.THM-bring to him/her
'S/he has brought me to him/her.'

2.3. Descriptive implicational

The implicational use of scale involves the statement of a regularity over an entire segment of the scale. A regularity stated about one item on the scale is automatically extended to all items that are higher (or lower) on the scale.

Implicational scales used for the description of particular languages have recently become common in optimality-theoretic approaches. Thus,

according to Zec (2007), the "sonority threshold" for the syllable peak in a given language can be described through the scale in (12):

(12) Vowel > Liquid > Nasal > Obstruent

This scale describes the likelihood that a segment type occurs as a syllable peak (most likely for vowels, least likely for obstruents). If a language allows a segment type to occur as a syllable peak, it will generally also allow all segment types that are higher on the scale. Individual languages can thus be described by specifying the cut-off point beyond which they do not allow segment types as syllable peaks. In Optimality Theory, this is generally done by turning the scale into a fixed constraint subhierarchy of markedness constraint, and by ranking a counteracting constraint among the markedness constraints to specify the cut-off point. Zec (2007) proposes the fixed constraint subhierarchy in (13) and uses the faithfulness constraint DEP ("Output depends on input") to specify the cut-off point.

(13) $*\mu_h$/OBSTR >> $*\mu_h$/NASAL >> $*\mu_h$/LIQUID >> $*\mu_h$/VOWEL

Zec claims that Tashlhiyt Berber, English, Slovak and Bulgarian represent increasingly restrictive systems, and he proposes to describe them as in (14), using the fixed hierarchy and the constraint Dep (which is highlighted here). All peak types to the left of the faithfulness constraint DEP are impossible, i.e. Tashlhiyt Berber allows all four segments types in (12) as syllable peaks, while Bulgarian only allows vowels.

(14) a. Imdlawn Tashlhiyt Berber
DEP >> $*\mu_h$/OBSTR >> $*\mu_h$/NASAL >> $*\mu_h$/LIQUID >> $*\mu_h$/VOWEL

b. English
$*\mu_h$/OBSTR >> DEP >> $*\mu_h$/NASAL >> $*\mu_h$/LIQUID >> $*\mu_h$/VOWEL

c. Slovak
$*\mu_h$/OBSTR >> $*\mu_h$/NASAL >> DEP >> $*\mu_h$/LIQUID >> $*\mu_h$/VOWEL

d. Bulgarian
$*\mu_h$/OBSTR >> $*\mu_h$/NASAL >> $*\mu_h$/LIQUID >> DEP >> $*\mu_h$/VOWEL

In the domain of morphosyntax, the best-known work taking this approach is Aissen (2003). According to Aissen, languages with different cut-off points of differential object marking can be described by ranking an economy constraint ($*\text{STRUC}_{\text{case}}$) at different positions within the universally

fixed subhierarchy of constraints that require case-marking of objects. (This subhierarchy is derived from the universal animacy and definiteness scales as well as the grammatical relations scale by harmonic alignment.) As in (14), different kinds of languages can be described by ranking the counteracting constraint *$\text{STRUC}_{\text{case}}$ in between the constraints of the fixed subhierarchy.

(15) a. Vietnamese
*$\text{STRUC}_{\text{case}}$ >> *OJ/**HUM** & *Ø_{CASE} >> * OJ/**ANIM** & *Ø_{CASE} >> *OJ/**INAN** & *Ø_{CASE}

b. Spanish
*OJ/**HUM** & *Ø_{CASE} >> *$\text{STRUC}_{\text{case}}$ >> * OJ/**ANIM** & *Ø_{CASE} >> *OJ/**INAN** & *Ø_{CASE}

c. Russian
*OJ/**HUM** & *Ø_{CASE} >> * OJ/**ANIM** & *Ø_{CASE} >> *$\text{STRUC}_{\text{case}}$ >> *OJ/**INAN** & *Ø_{CASE}

d. Hungarian
*OJ/**HUM** & *Ø_{CASE} >> * OJ/**ANIM** & *Ø_{CASE} >> *OJ/**INAN** & *Ø_{CASE} >> *$\text{STRUC}_{\text{case}}$

Vietnamese is an example of a language where the economy constraint is ranked very high and thus no objects are case-marked, while in Hungarian it is ranked so low that all objects are case-marked.

While the use of scales to describe particular languages is characteristic of Optimality Theory, it is not totally novel. An early representative of the descriptive relational use of scales is Cole et al. (1977).

2.4. Comparative implicational

The comparative use of implicational scales is the classical use of such scales and predates the descriptive use. The two best-known examples of implicational scales are the **grammatical relations scale** (Keenan & Comrie 1977), used for the formulation of generalizations in the domain of relative clause formation, and the **animacy scale** (also called *individuation scale, empathy scale*, etc.), which is used for various cross-linguistic generalizations. An example is differential object marking, and Lazard's (1994:229-230) discussion of it in terms of the scale in (16).

(16) échelle d'individuation:
pronoms > humain défini > humain indéfini/non-humain défini > non-humain indéfini > indéfini non-spécifique

Lazard formulates the differential object marking generalization as in (17):

(17) "On constate que, quelle que soit l'extension de l'usage de la marque, celle-ci se trouve toujours du côté du plus défini/plus humain et son absence du côté du mois défini/mois humain. Le marquage de l'objet est donc corrélatif de son individuation."

This approach was adopted by Aissen (2003), who also claims that her fixed constraint subhierarchy (which is a kind of scale) allows her to express the generalization in (17), i.e. that overt object marking generally affects the top end of the animacy scale. What Aissen adds to this is the simultaneous use of the scale as a descriptive implicational scale, as we saw in §2.3.

3. Conflating descriptive and comparative scales

In this paper, I argue that descriptive and comparative scales should be kept strictly apart, just as descriptive categories and comparative concepts should be kept apart in general (Haspelmath 2008+).

By contrast, generative approaches generally equate descriptive categories and comparative concepts (assumed to be innate), and this is very explicit in the literature on Optimality Theory:

> McCarthy (2002:1)
> "One of the most compelling features of OT, in my view, is the way that **it unites description of individual languages with explanation of language typology**... OT is inherently typological: the grammar of one language inevitably incorporates claims about the grammars of all languages. This joining of the individual and the universal...is probably the most important insight of the theory."
>
> Aissen (2003:437)
> "The challenge then is to **develop a theory of DOM** [=differential object marking] which expresses the generalization ..., and **at the**

> **same time** allows for the various ways in which DOM can be **implemented in particular languages**."

But this conflation of descriptive and comparative concepts is also the programme of Croft (2003), and his Radical Construction Grammar (2001):

> "Language-specific grammatical categories are the actual specific mappings of grammatical [forms] onto the conceptual space. Part of the representation of a speaker's knowledge, then, is a set of semantic maps onto a conceptual space whose structure is largely universal." (Croft 2003:139)

As an example of this, Croft (2003) mentions the role of the animacy scale in governing the occurrence of overt plural marking, as illustrated in (18):

(18) Plural marking:

Guaraní:	1st/2nd – 3rd – human – animate – inanimate
Usan:	1st/2nd – 3rd – human – animate – inanimate
Tiwi:	1st/2nd – 3rd – human – animate – inanimate
Kharia:	1st/2nd – 3rd – human – animate – inanimate
English:	1st/2nd – 3rd – human – animate – inanimate

The underlying scale is universal, and language-particular categories are expressed as mappings on this universal conceptual space.

4. Why descriptive and comparative scales should be kept separate

4.1. Descriptive categories vs. comparative concepts

I have stressed in previous work that descriptive categories (as are needed for language-specific description) are of a very different nature from comparative concepts – conflating them leads to all kinds of problems (cf. Haspelmath 2007, 2008+). In particular, it is not possible to come up with a list of categories that would suffice to describe all languages – while categories in different languages tend to be broadly similar, they are never completely identical, and many languages have categories that seem to be quite unique to them. The attempt to squeeze individual languages into a

straitjacket of pre-established categories does not do justice to the individual languages and often fails completely.

Descriptive scales must be based on **descriptive categories**, i.e. categories that are defined within an individual language. Comparative scales must be based on **comparative concepts**, i.e. concepts created by comparative linguists for the purpose of comparing languages.

Consider, for example, the notions of "recipient" and "theme" in the DPRC generalization in §2.2 above: These are semantic roles (defined with respect to physical transfer verbs such as 'give'), but in French the corresponding regularity actually affects all Dative Clitics, and these are only imperfectly correlated with recipients. The French Dative cannot be equated with the semantic role "recipient", so the generalization in (8) is not sufficient to predict the behaviour of French categories. On the other hand, it is clear that French is strikingly similar to Modern Greek and Shambala (and many other languages), and this similarity is captured by the generalization in (8). But the generalization is formulated in terms of comparative concepts, not in terms of categories that a particular language would have. What one needs to know about French in order to master the language thus goes beyond the cross-linguistic generalization in (8), but this additional information is not readily comparable across languages.

The situation is quite similar for Navajo Subject-Object Inversion. Frishberg (1972:261) observes that

> "The concept of animacy with which this chapter is concerned is the native Navaho concept. Animate things in Navaho are things that are capable of self-induced motion. This definition includes horses, sheep, cars, wind, rain, and running water."

This means that what one needs to know to master Navajo goes significantly beyond knowing the general, cross-linguistic animacy scale (cf. 16) and the rules in (2). The Navajo animacy scale in (1) is specific to Navajo. Again, the Navajo situation is not unique and is broadly comparable to similar situations in many other languages, and we need comparative concepts and scales in order to express these similarities. But these comparative scales cannot be used directly to express language-specific rules.

Let us now look at relational scales and then at implicational scales more closely.

4.2. Descriptive relational scales are different from comparative relational scales

Comparative relational scales are (by definition) universal, but descriptive relational scales may not only contain categories that do not map perfectly on the comparazive concepts, but they may also include items that do not have a counterpart in a universal scale at all.

Let us consider Ditransitive Person-Role phenomena again, using the example of the well-known French contrast (9a-b), repeated here for convenience.

(9) French (e.g. Grevisse 1986:§657 (b) 1°)

a.	(1>3)	*Agnès*	*me*	*la*	*présentera.*
		Agnès	1SG.REC	3SG.F.THM	present.FUT.3SG
		'Agnès will introduce her to me.'			
b.	(3>1)	**Agnès*	*me*	*lui*	*présentera.*
		Agnès	1SG.THM	3SG.F.REC	present.FUT.3SG
		'Agnès will introduce me to her.'			

Universally, we can state the generalization in (19) (Haspelmath 2004a; see also (8) above):

(19) If the Recipient is higher on the person scale (1/2 > 3) than the Theme, then bound pronoun combinations are possible in all languages with bound object pronouns.

But for French, this is not sufficient, because the reflexive clitic behaves like the 1st/2nd person clitic:

(20)	(3>1)	**Agnès*	*se*	*lui*	*présentera.*
		Agnès	REFL.THM	3SG.F.REC	present.FUT.3SG
		'Agnès will introduce herself to her.'			

Apparently French has a (descriptive) scale "1/2/REFL > 3", but this is a language-specific scale. In the comparative scale, "REFL" cannot be ranked because it does not behave consistently across languages.[1]

[1]Another possibility is that the ban on *me/te/se+lui* is somehow due to the fact that *me/te/se* do not distinguish accusative and dative forms, as proposed by Grimshaw (2001). In that case, this would not be a person scale effect from a French language-specific point of view

Next, let us consider the person scale in the context of monotransitive constructions. It is well known that for inverse and similar constructions, some languages have a person scale "1 > 2 > 3", but others have a scale "2 > 1 > 3" (especially Algonquian languages). Aissen (1999) solves this problem by conflating 1st and 2nd person to "local person". This is convenient for the comparative use of the person scale (because no predictions can be made for the relation between 1st and 2nd person), but for language-specific description it means that only part of the description can rely on the universal constraint subhierarchy. The other part of the description has to be done by other means, but these means would surely be sufficient to describe the entire system. Thus, description by comparative concepts would be a very odd kind of description.

4.3. Descriptive implicational scales are different from comparative implicational scales

The need to distinguish between comparative and descriptive scales is just as apparent in the case of implicational scales. There are two main reasons for this: Implications may have exceptions, and implications may be relevant only for a small part of the system, so that a description in terms of a comparative implicational scale would yield very partial descriptions.

4.3.1. Exceptions

If the language-specific situation is expressed by encoding it in the universal comparative scale, then there is no way to describe exceptional cases. But many scalar universals are in fact universal tendencies, i.e. they admit exceptions. Let us consider just two examples. These could be easily multiplied

Example 1: Zec (2007:183) notes that Swahili is an exception to the universal comparative scale in (12) above. Swahili has vowels and nasals as syllable peaks, but not liquids. Zec comments: "From an OT perspective, such discontinuities may well be due to further constraint interactions." But this is not in general a viable way out: If "further constraint interactions" are

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at all, but from a comparative perspective, it could still be seen as an instantiation of the generalization in (19). Basically, the language-specific analysis is irrelevant for cross-linguistic analysis (cf. Haspelmath 2004b).

invoked to explain exceptions, this opens a Pandora's box, and nothing can be excluded anymore. Such "further constraints" could always be present, and the approach would not make any predictions anymore.

Example 2: In Nganasan (Samoyedic), pronouns show no case distinctions, but nouns inflect on an accusative pattern (cf. Filimonova 2005). Aissen (2003) acts as if such exceptions did not exist, but the fact that they exist means that at least the exceptional languages cannot be described by means of the comparative scales. But if there is one language for which comparative scales cannot be used as descriptive scales, so that an alternative mechanism must be used, this means that this alternative mechanism is available for all languages.

4.3.2. Partial descriptions

Descriptions that are based entirely on the scale would be very incomplete in many cases, because often the relevant patterns are deeply embedded in the grammar and cannot be described without taking other phenomena into account.

For example, in German, differential object marking in noun inflection is found only in one small subclass of singular masculine nouns (Haspelmath 2002:245):

	MASCULINE			FEMININE		NEUTER	
NOMINATIVE	*Löwe*	*Mann*	*Garten*	*Frau*	*Nase*	*Kind*	*Buch*
ACCUSATIVE	*Löwe-**n***	*Mann*	*Garten*	*Frau*	*Nase*	*Kind*	*Buch*
	'lion'	'man'	'garden'	'woman'	'nose'	'child'	'book'

This does seem to be an instantiation of the comparative scale in (16) and the generalization in (17), but it is not clear how the comparative scale would be used in the description of the German facts.

Similarly, Russian has differential object marking in noun inflection, but only in a particular (though quite large) subclass of singular masculine nouns:

	MASCULINE			FEMININE		NEUTER	
NOMINATIVE	*kot*	*sud'j-a*	*nos*	*žen-a*	*ruk-a*	*ditja*	*pero*
ACCUSATIVE	*kot-**a***	*sud'j-u*	*nos*	*žen-u*	*ruk-u*	*ditja*	*pero*
	'cat'	'judge'	'nose'	'wife'	'hand'	'child'	'pen'

It is perhaps possible to describe these systems using Aissen's constraint subhierarchy, but such descriptions would be vastly more complex than alternative descriptions that do not try to describe everything with universal categories and scales.

5. Conclusion

I conclude that descriptive scales and comparative scales should be distinguished carefully. Descriptive scales are sometimes useful in that language-specific generalizations can best be formulated using a scale. Comparative scales are very often useful to formulate cross-linguistic generalizations, especially implicational generalizations. But the mere fact that a language-specific pattern instantiates a known cross-linguistic generalization does not mean that it should be described in terms of this pattern.

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